Dr JOHN WEBB

PRESENTATION OF COMMENTS as an Interested Party

Under the Town And Country (Inquiries Procedure) (England) Rules 2000

Planning Appeal Reference: APP/D1265/W/23/3327692

APPEAL BY: Powerfuel Portland Limited

PROJECT: Construction of an Energy Recovery Facility (ERF) with ancillary buildings and works

SITE: Land adjacent to Balaclava Bay at Portland Port, Castletown, Portland, Dorset, DT5 1PP

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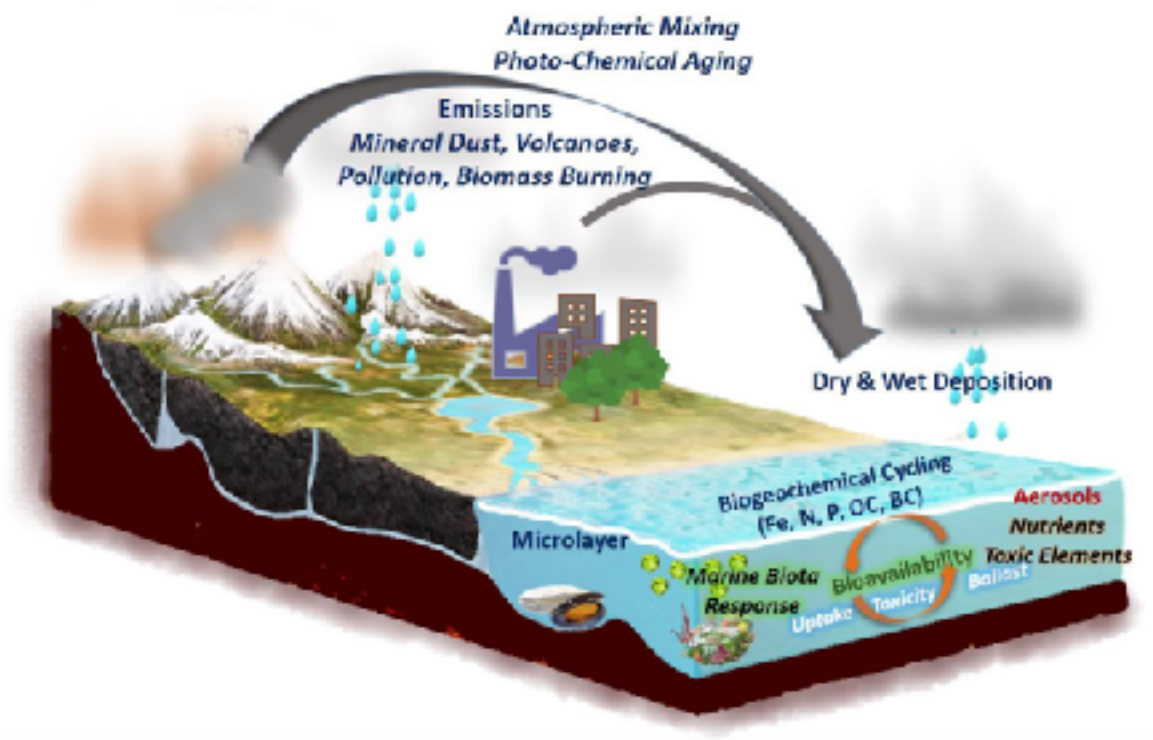
ACTIONS TO FINALISE THIS SCRIPT & SLIDESHOW

Skim through further potential sources noted/saved
(ES ch.3; Apdx K1 Addendum Appendices 3.1-3.3; 9.3;*
Appendix D2 2nd Erratum; ES Main Report 2nd Erratum;
Apdx 3.1 2nd Erratum; Core Docs: 2.28; 2.29a-2.29g;
2.30 Erratum; 2.31; …)
Archive the unreferenced source quotes from Annex A.
Check Appendices for vital content not yet in the Presentation
Skim through the DC's and PPL's Rebuttals for relevant items
Check that everything is within the scope of my Comments
Compare with the contents of my Comments for major omissions
Apply continuous section & paragraph numbering to the Script
Check that all references are given in footnotes
Explicitly challenge the Appellant's PoE statements
Check all quotations that I've transcribed

SUMMARY

This objection responds to heightened scientific and public alarm at the increasing damage to shores, seas and oceans from human, and especially industrial, activities. In my Comments I address a vital yet under-examined aspect of the proposed siting of a waste incinerator on Portland: the potential for harms to coastal and marine habitats by particulate emissions from the proposed facility's chimney stack and - to a lesser extent - from freight vehicles' tyres and brakes.

Figure 1. Atmospheric & marine mixing & ageing of emissions



'Particulate emissions' just means 'dust', but the Inquiry uses more formal terms and I'm mainly interested in dust so fine that you would need a microscope to see it.

MY BACKGROUND

My relevant background includes being a director of the United Kingdom Against Incineration Network (UKWIN). In this Appeal Inquiry's sessions though I am presenting evidence on my own behalf as an Interested Party rather than representing UKWIN, which is making separate submissions to the inquiry. I am also a trustee of the Circularity Foundation (which is at a formative stage). I am a long-standing Fellow of the Royal

Geographical Society (FRGS, since 1987) and subject to the Member's Code of Conduct.

My academic qualifications include a science degree (BSc) in Mathematics and Physics with Chemistry and Geology, a master's degree (MSc) in Ecology and Society and a doctorate (PhD) in methods of textual analysis of official documents.

I am a keen member of the Town & Country Planning Association, the Green Alliance network and other environmental networks. My views and actions reflect a deep ecological (rather than just environmental) concern at the impacts of climate change toward 2030, 2050 and far longer periods of time.

SCOPE OF MY COMMENTS

I am not a Marine Biologist nor am I presenting evidence as a Rule 6 Party supported by Expert Witnesses so I shall not seek to present evidence that could in itself determine the outcome of this Appeal. Rather I hope to provide some indications that the Inspector may be able to include in the planning balance for his report.

So this account does not prove nor demonstrate, let alone quantify, definite harms to specific habitats and wildlife species in the coastal and marine areas around Portland; it only points to the absence of such analysis in depth and indicates potentials for such harms to occur.

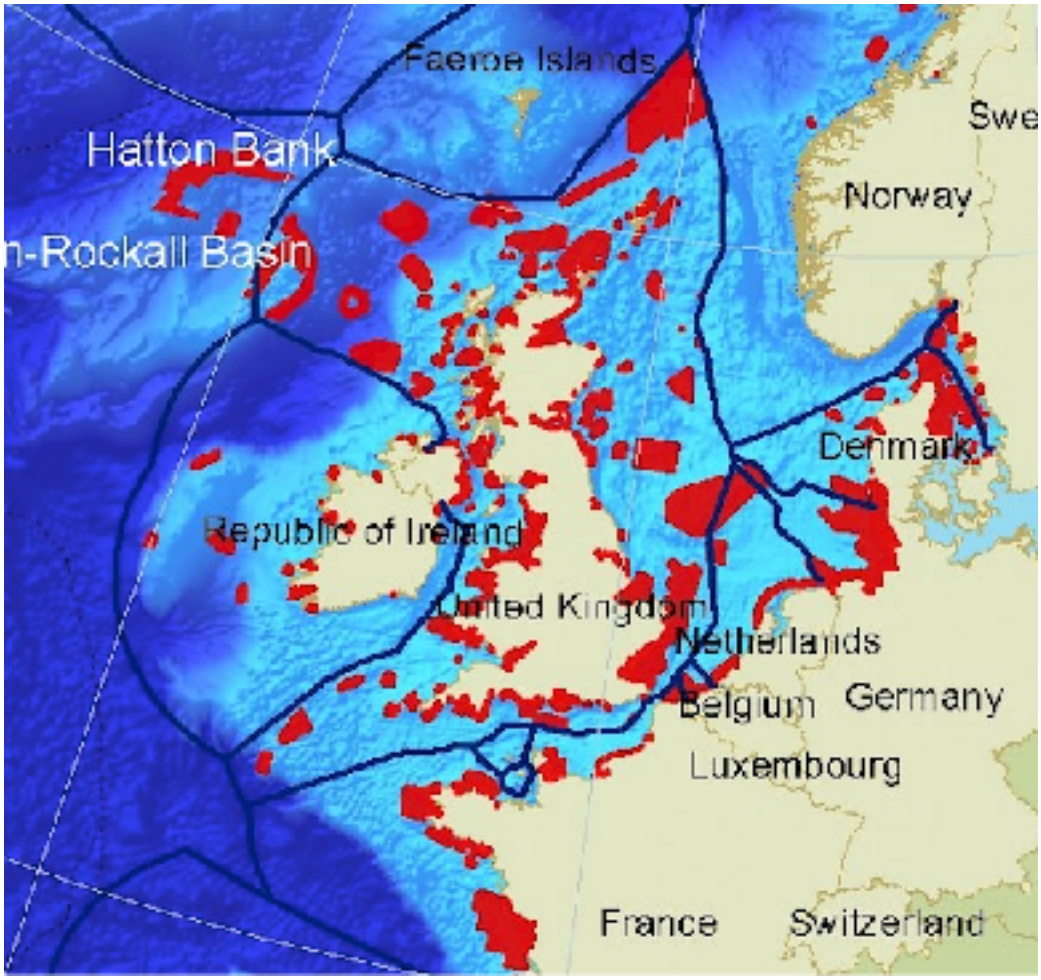
Further limitations of my Comments are noted in Appendix C, Exclusions from my Topic.

GEOGRAPHICAL CONTEXT

The UK is largely surrounded by coastal Marine Protected Areas (MPAs) as illustrated in Figure 1; and also in Figure 2 showing an extract for the UK and marine environs.

It would be against the Government's ongoing 'direction of travel' in habitat protection. For this reason I prefer not to be specific about the current degrees of protection of marine and coastal areas around Portland. Also I would caution against any attempt to cram harmful activities into the remaining unprotected stretches of coast.
There are many habitats that would become receptors of particulate emissions. There is a range of scientific evidences for harms from particulate emissions to coastal and marine habitats, samples of which I have cited in my Comments and in my Appendix A. Within the neighbouring coasts and seas, there are physical, chemical and biological processes that would convey and combine the particulates into the natural environment.

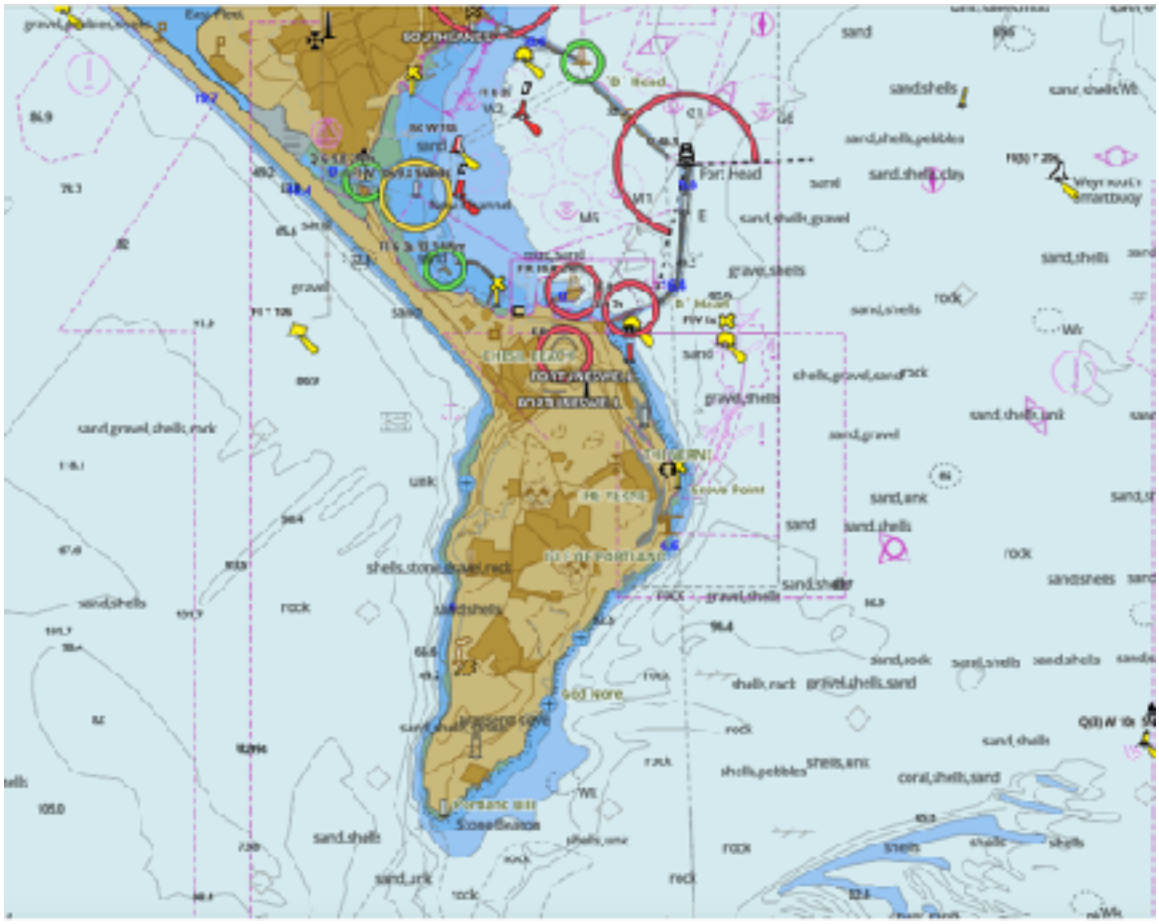
Figure 2. Extract of map of OSPAR MPAs - UK & environs



Together these factors would concentrate the emissions physically, chemically and organically up the 'food chain'.

The processes, habitats, wildlife and their interactions are briefly outlined in my Comments. They are also addressed at some length in the Appellant's Environmental

Figure 3. iBoating navigation chart - Portland



Statement[1] and also in objections by The Portland Association (TPA)/Debbie Tulett[2] and Dorset Wildlife Trust.[3]

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[1] including CD1/1.37e: PPL/Fichtner, Appendix D.2, 'Process Emissions Modelling', 2nd Sept. 2020, pages 40-43 and figures in Annexes, section 8, 'Impacts at Ecological Receptors'.

[2] including CD11/11.4: SPWI & TPA/Jurassic Coast Against Incineration project, Oct. 2023: 'Marine planning policy and impacts on marine designated sites'; '… Policy 18 Biodiversity and geological interest'; covering letter for 'The Portland Association response to the Natural England Consultee report', 4.1.2022; section (24) of '… the case for the development & conclusions and the planning balance' 31.5.2022; and TPA/Jurassic Coast Against Incineration Project in August 2022, 'Report on the Proposed Waste Incinerator at Portland Port' (sections on 'Conservation Designations' and 'The Environment').

[3] CD4/4.66: Letter by Dorset Wildlife Trust 27.9.21 to Dorset County Council, section on 'Marine impacts and planning policy'.

The seabeds around Portland and Chesil Beach comprise sand, gravel, pebbles, shells and rock, along with some areas of mud, clay and coral. These are more varied than the beds of the English Channel to the south.

POLICIES, REGULATIONS AND GUIDANCE

The focus of my Comments is on residual particulate emissions, comprising those from the proposed chimney stack, after mitigation by measures specified by the Appellant to contain them,[4] and those from the tyres and brakes (but not exhausts) of heavy goods vehicles (HGVs). I only consider those particulate emissions that are deposited by air or water onto the coastal and marine surfaces, including the shores, cliffs, lagoon and inshore seas all around the Isle of Portland.

The wildlife includes all biota (living organisms) whether of a visible or microscopic size, including fauna and flora in these habitats, both at present and in the future under changed climatic conditions. I consider the wellbeing of wildlife in terms of the habitats on which it relies. This is a distinct priority from tracking populations of individual species, as may occur in assessment of changes in levels of biodiversity, which I do not address.

Rather I consider the conditions for wellbeing of ecosystems in local coastal and marine areas, whether designated for protection or not. That's because the climatic changes that are taking place now and that will continue for decades and perhaps centuries to come will incur substantial replacement of the biota in each of these locales.

I cite national and (to an extent) international policies, regulations and guidance, since other Parties to this Inquiry are addressing local provisions.

AREAS OF DEPOSITION

My Comments traced the journey of particulate matter from the proposed furnace through pollution control, out of the chimney stack, across the seascape, onto the

[4] in CD1/36i: ES chapter 8, pages 8.15-8.16, 'Ground Conditions and Water Quality' sections 8.74-8.76, concluding that "with these measures in place the effects on marine water quality are assessed as negligible." and in page 8-18, 'Residual effects' section 8.78, "With these measures in place, no significant residual effects are predicted on coastal water or groundwater quality."

coasts and inshore seas. My Comments continued from there into the physical, chemical and biological processes that would sort, combine and modify the particulate materials and gather and concentrate them into drifts and layers of potentially harmful substances on shores, in the ‘water columns’ and on and within the beds of the bays, the tidal estuary, the Fleet lagoon and adjoining marshlands.

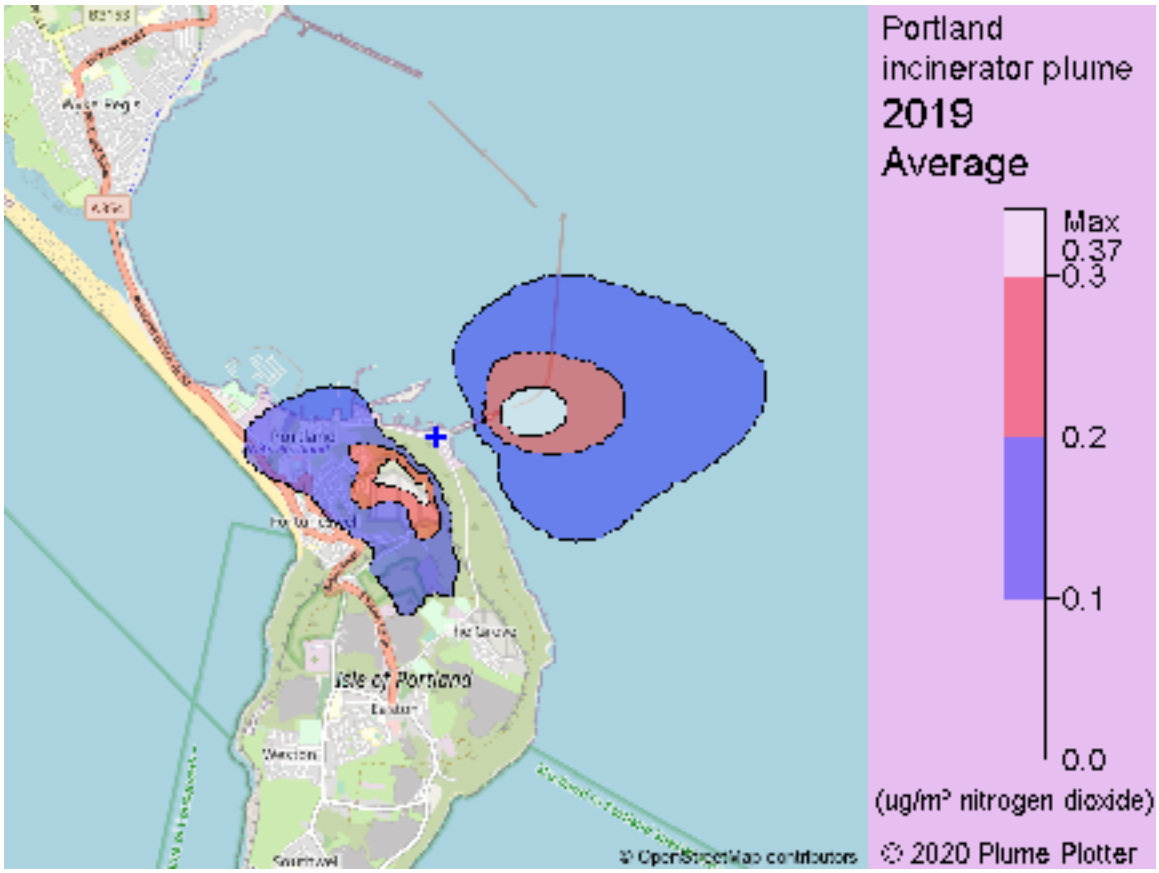
Figure 4. Map of the Study Area for Fichtner’s modelling of concentration with enlargement of its text. (CD1/1.36i ES chapter 9, section 9.3)

Few if any other proposals for ‘Energy Recovery Facilities’ (ERFs) in the UK have been situated with all-around exposure to the sea. However the area around the Isle of Portland is surrounded by coasts and seas; including some 66% (in angular terms) of the areas immediately surrounding the proposed site on Balaclava Bay. On that basis we might reasonably expect the assessments of impacts on the environs, and especially on wildlife habitats, to address coastal and marine impacts in a level of detail appropriate to their complexity.

The wind rose in Figure 3[5] shows the incoming directions and intensity with which winds arrive at Portland; predominantly and most strongly from the west-south-west. The annual pattern of plume of emissions would thus predominately

[5] Wind rose for Portland, 5-year average, Dec. 2023, from https://wind.willyweather.co.uk/sw/dorset/portland.html

Figure 5. Plume Plotter map of modelled plume: NO_2 intensity, 2019 average

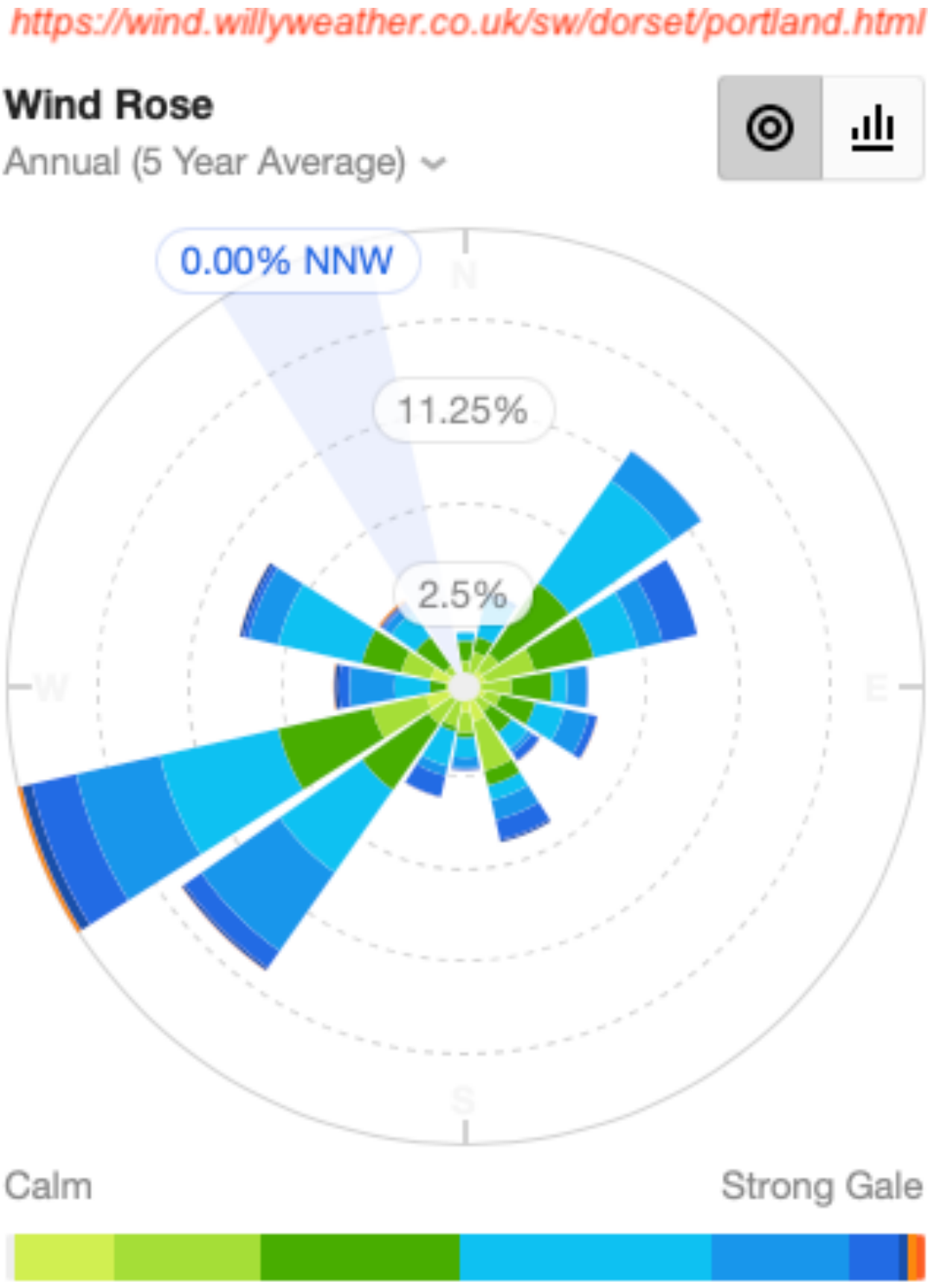


be directed east-north-eastwards from Portland. The area of highest intensity to seaward is entirely offshore, on either side of the southern Breakwater. The prevailing winds from south-southwest would come around the Isle of Portland and direct the plume (on average) east-northeastwards onto Weymouth Bay.

In the opposite direction, there is a lesser area of intensity to landward. The high ground of the Portland Peninsula blocks most emissions from reaching the west coast of Portland.[6] The anti-prevailing winds from the north-east drive the plume against the high ground of The Verne on the Isle of Portland and spread it across the north of the island. The landward area of heightened average intensity includes a coastal stretch between the Cruise Ship Dock by the Harbour and the

[6] As an aside about easterly winds: the chimney stack would have to be much higher for the wind to carry the particulate emissions across the Verne, over the west coast and on towards the western approaches of the English Channel; but we have no modelling for such an effect.

Figure 6. Wind rose (5 year average) for Portland



Yacht Club by the Marina. That is close to where the tidal flow via the Smallmouth Passage under the Ferry Bridge flows into The Fleet lagoon.

These observations are about the average pattern. At any point in time, depending on weather conditions, different areas of land and sea will be affected. Thus all areas around the Isle of Portland are liable sometimes to have the plume of emissions - *visible or not* - carried in their direction The residual particulate materials may be 'washed' out of the atmosphere prematurely by precipitation.

PROCESSES OF ACCUMULATION AND CONCENTRATION

In my Comments, I outlined a wide range of natural processes that may concentrate toxins from particulate emissions on the way to, and within, coastal & marine habitats. These include a). physical processes including the movements of winds, currents and tides, solution and adsorption; b). chemical processes including aqueous reactions in the 'envelope' of water vapour around the plume, ionisation in the 'water column' and reactions with compounds in seawaters, sea-beds and coastal materials; and c). biological processes to do with 'food chains' and wildlife's needs for access to clean waters, light and protective 'homes'.

Figure 5: Physical processes on airborne emissions of ultra fine particles

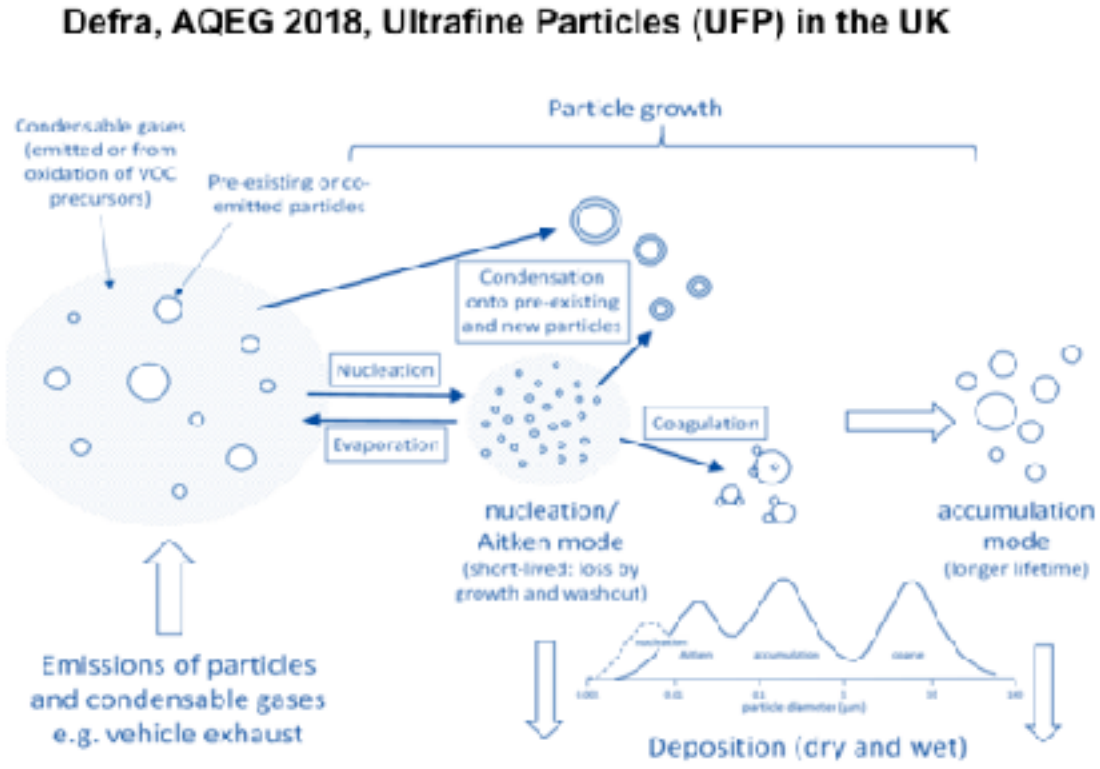
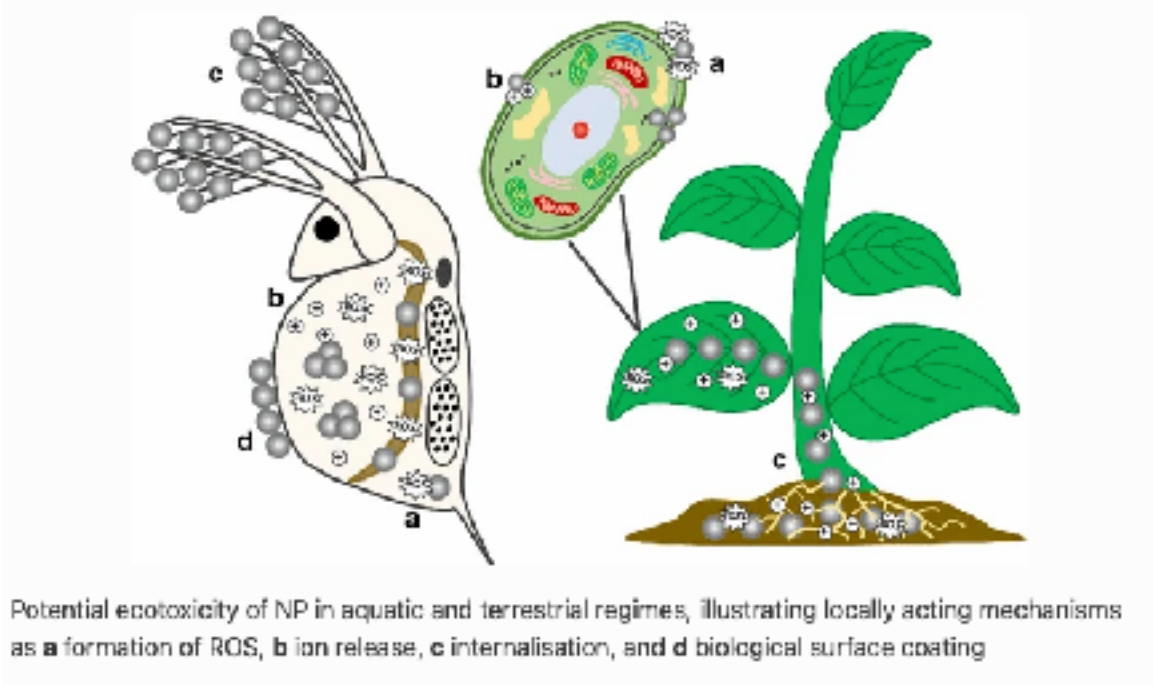


Figure 7. Organisms undergoing harm from ultra fine particles



Potential ecotoxicity of NP in aquatic and terrestrial regimes, illustrating locally acting mechanisms as **a** formation of ROS, **b** ion release, **c** internalisation, and **d** biological surface coating

These processes of concentration[7] are a crucial factor in my Comments, in contrast to the simplistic modelling of dispersion presented by the Appellant both in the Application and for the Appeal.

The various transformations imply that the particles that are emitted are not the same as those deposited, let alone those that are aged by the passage of time.

As far as I know, there is no detailed modelling available to the Inquiry that takes account of processes of concentration, transformation and ageing of particulate emissions in the coastal and marine areas around the Isle of Portland.

Rather in my view, the assurances of insignificant and moderate degrees of harm are based on the notion that toxic emissions are avoided, abated and dispersed to such an extent that the resulting impacts of emissions on habitats are almost all within acceptable limits, even on a conservative basis of assumptions. That simplistic model should not be relied upon to indicate insignificance of harms.

[7] Schematic from Defra, AQEG 2018, 'Ultrafine Patricles (UFP) in the UK'.

APPROACH TO MODELLING OF POTENTIAL FOR HARMS

The NPPF requires "planning policies and decisions … to ensure effective alignment of the terrestrial and marine planning regimes."[8] This might be understood to require consistency of methods for assessment between these regimes, but the word "effective" shifts the focus onto outcomes, so that account has to be taken of which approach is appropriate to the effects of upon terrestrial and marine environments of development, normal and abnormal modes of operation and of decommissioning.

Thus whilst the Appellant's approach to modelling of potential for harms is customary and hence tested and relied upon for a terrestrial regime, a quite different approach may be appropriate to be effective for a marine regime.

The Appellant's approach to assessing the environmental impacts of emissions is to apply simple modelling[9] to a highly complex situation and thus in my view to arrive at misleading conclusions as to the acceptability of harms. Much of the modelling is focussed on land-based habitats and species, and especially on human health and wellbeing, as if that were distinct from natural health and wellbeing.

The Applicant's approach clearly reflects a linear view of the world in which materials are taken from the natural world into the human domain and are turned into waste, which is then dumped back into the natural world. There it is regarded as dispersed so widely as to be 'gone' from human purview. Rather I point towards a more 'circular' view in which material is dispersed yet not destroyed; sea and land are interconnected and processes of disposal and dispersion are complemented with those of deposition, concentration and re-use by wildlife, potentially with harmful effects.

In the Environmental Statement, the Appellant's approach relies on a linear model: extract, use and dispose.[10] In this model, the disposal of emissions consists of estimating dispersion into the atmosphere, assessing the concentration and (in this case) declaring it to be below threshold or target levels and hence mostly to cause no significant harm. Likewise emissions that reach coastal, inshore and lagoon areas are

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[8] CD9, 9.1: NPPF 2023, para. 170.

[9] For instance as outlined in CD9, 9.3: the Environmental Statement's Appendix 9.3 by ABPmer, 'Potential Marine Impacts of the Proposed Portland Energy Recovery Facility (ERF)', June 2021, for various substances though not specifically for particulate emissions.

[10] CD1, 1.36j1: PPL, ES June 2021, 'Potential Marine Impacts…'.; and also CD2, 2.17p: Second Addendum, Appendix 9.3 'Potential Marine Impacts…'.

estimated to be dispersed so as in the main to cause no significant harm in respect of

Figure 8. An example of the Appellant's simple modelling method
(CD 2.17p: PPL ES 9.3 Study Area for concentration - map and extract of text)

various airborne materials (in terms of gases and particulates) and for vulnerable receptors (including protected areas, habitats and species.)

As I understand it, the Appellant recognises the various marine processes and their complexity, by describing the approach of the Environmental Statement as using "a simple model" (as quoted below).[11] In essence the Appellant's approach assumes spreading of the concentration of dioxide emissions evenly across an entire seabed area and into a depth of 10cm of sand. The study area chosen is a rectangular shape over part of Weymouth Bay, but excluding the land and West Bay. These parameters are

[11] CD1/1.36a: page NTS-7, section 'Assessment methodology', "The various specialist assessments … followed generally similar methods. … The effects of the proposed development were assessed using a method that combines the sensitivity and importance of receptors with the likely size of the change from the baseline situation to establish the degree of the effects."
Also, regarding dioxins, CD2/2.17p, ES Addendum/Appendices, 9.3 'Potential marine impacts…', page 7, section 2.3.4 'Dioxins', "Within the marine environment, dioxins will strongly adsorb to organic particles and sediment within the water column and may deposit within local marine sediments. Dissolved concentrations in the water column will be negligible. In order to assess the potential risk of accumulation of dioxins within local sediments, a simple model has been developed and applied using the same qualities as the water quality assessment …"
Likewise for mercury, "within the marine environment, some mercury will adsorb to organic particles and sediment within the water column and may deposit within local marine sediments." The simple modelling uses a conservative assumption that "all dioxide emitted to air will deposit locally …" *(emphasis added)*

quite arbitrary. The supposed concentration may be varied by orders of magnitude by assuming different expanses (the Western Approaches? Balaclava Bay?[12]) and different depths of a permeable substrate.

Another parameter is the duration: 1 second is assumed, resulting in a tiny instant addition to the concentration, but that could for instance be 31.5 million times greater by considering an annual accumulation. *[check ES - per second?]*

There is no modelling of the extent to which, and as to where, harmful pollutants including particulate matter could accumulate.

Thus I am not questioning the Appellant's approach[13] to modelling of potential harms, as far as it goes, but I am contending that the chosen approach omits the more detailed assessment that would require modelling of immediate and long-term processes that can concentrate particulate matter in ways and in places that are potentially harmful to coastal and marine wildlife habitats.[14]

This simplistic[15] approach, I contend, is wholly inadequate for assessing harms to the living marine habitats all around the Isle of Portland. That's because the tidal and marine areas include a wide range of processes that not only disperse particulate matter but also serve to sift, sort and concentrate that matter into, through and onto wildlife habitats.

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[12] For instance, on a rare near-windless day with heavy precipitation, newly-emitted residual particulates could be 'washed down' onto the shore and the adjoining seawater. That could be especially harmful in conditions of abnormal waste burning in the furnace.

[13] DC's Rebuttals, page 23, in Table 9.1 about CD7, 7.1: Bournemouth, Christchurch, Poole and Dorset Waste Plan 2019: According to the same norms do I not disagree with the basis of the Defendant's response, as far as it also goes, that: "the Appeal Proposal would not adversely affect the integrity of European sites, or other designated ecological sites."

[14] DC's Rebuttals, page 23, in Table 9.1, referring to CD7, 7.1: Bournemouth, Christchurch, Poole and Dorset Waste Plan 2019: Nor in the same context and according to the same norms do I disagree with the Defendant's response, as far as it goes, that: "the Appeal Proposal would not adversely affect the integrity of European sites, or other designated ecological sites."

[15] In a sense of being expressed "In a manner that simplifies a concept or issue so that its nuance and complexity are lost or important details are overlooked." (Collaborative International Dictionary of English,% Wiktionary, https://en.wiktionary.org/wiki/simplistic 2023)

Besides, the Appellant's Environmental Statement relied on a handy but misleading basis for assessing the concentrations[16] and potential for harms to marine receptors from emissions.[17] It used concentration of mass (micro-grammes per cubic metre) rather than a range of other factors including number of particles[18] (and hence surface area), composition, reactivity, physical and chemical structures and coherence, transgenerational effects etc. as relevant indices of potential for harm to organisms.[19]

A PEACEFUL AND PROSPEROUS PORTLAND ISLE

The Appellant's proposal of an energy recovery facility (ERF) presupposes an industrial landscape on which Portland has largely relied. It represents a leap backwards into a past that is no longer available to recall: on 'a hiding to nothing'.

Now new activities have arisen that promise a peaceful and prosperous future that is completely at odds with the desire to situate a waste incinerator by the shore of Balaclava Bay and the Harbour.

The beauty of this setting comes alive, so to speak, when you take to the sea and especially when you look under the water at the marine wildlife that would be affected by particulate emissions. In this final slide, I'd like to finish with a glimpse of that peace and beauty.

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[16] e.g. as outlined for mercury in CD2.17p ES Addendum Apdx 9.3 Potential marine impacts of the proposed Portland ERF.pdf, page 6 in : "The daily average worst-case potential input of mercury into the 4,000-hectare area of sea surrounding Portland Harbour is 1,720 mg …"

[17] including in CD1/1.36k, PPL's Environmental Statement, chapter 10 'Natural Heritage'; CD1 1.37e, Appendix D.2, 'Air Quality Process emissions modelling', section 8 'Impact at ecological receptors'; CD1/1.37f, Appendix D.3, 'Air Quality Roads Emissions Modelling' especially in sections 6, 'Results…'.

[18] See Appendix B of this presentation, 'Quantity of Particulate Matte'r, for an unverified indication of the number of fugitive particles a year from the proposed facility.

[19] as identified in the Atmosphere journal: Ventura *et al.* 27 May 2021,12(6), page 684; article: 'Deposition of Aerosols onto Upper Ocean and Their Impacts on Marine Biota'. https://doi.org/10.3390/atmos12060684

CONCLUSION

The site proposed for an Energy Recovery Facility is quite unique in England since it is surrounded by inshore sea areas, bays and a lagoon. It would be at the seashore's edge on a relatively small island which is in the English Channel off the south coast of England. From a mainland perspective, the facility would thus in effect be a marine installation; so the site is a uniquely unsuitable situation to choose for this proposal.

The areas that would be affected by particulate emissions partly include wildlife habitats that are protected in various respects and in any case should be treated as beneficial and potentially worth protecting in their own right.

As far as the assessments go, I am not disputing the simplistic assessments of dispersal and short-term effects of emissions as shown in the Applicant's Environmental Statement. Rather I'm taking the story onward from there in terms of long-term consequences that may occur cumulatively during, and well beyond, the operating lifetime of the proposed facility.

On this basis I urge the Inspector to take account of harms to coastal and marine habitats in arriving at the planning balance for land usage on the proposed site.

Now I would welcome questions from the Inspector and - so long as I can ask questions in return - questions of clarification from other parties including the representatives of the Appellant.